MBASE, CMMI, and Benefits Realization

Barry Boehm, USC
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Outline

- Background
- Overview of CMM, CMMI, and MBASE requirements world-views
- Specific CMMI and MBASE requirements practices
  - Application to CS 577b
  - Relation to Benefits Realization Approach (BRA)
- Overview of BRA
  - Integration with MBASE
- References
Background

- We've been using SW CMM V1.1 book in second half of MBASE project course
  - Not for first half: too passive
- Review of CMMI: Remedies front-end passiveness of SW CMM V1.1
  - Needs to be complemented by a project-oriented approach
  - MBASE a strong candidate
- Discovered DMR Benefits Realization Approach in MBASE discussions with FAA
  - Review of BRA: powerful; complementary to MBASE
- Integrating MBASE, CMMI, and BRA
  - Constructed MBASE-CMMI mappings
  - Will use in both halves of MBASE project course
- Giving SEPG 2000 tutorial: "Transitioning to the CMMI via MBASE," March 20, 2000
- Plan to provide a free Affiliates' tutorial in Summer 2000

The Gospel According to SW CMM v.1.1

- Requirements Management, Ability 1:
  "Analysis and allocation of the system requirements
  is not the responsibility of the software engineering group
  but is a prerequisite for their work."
The CMMI Software Paradigm

- System and software engineering are integrated
  - Software has a seat at the center table
- Requirements, architecture, and process are developed concurrently
  - Along with prototypes and key capabilities
- Developments done by integrated teams
  - Collaborative vs. adversarial process
  - Based on shared vision, negotiated stakeholder concurrence
CMMI Requirements World View - in Process Area terms

Integrated Team, Shared Vision, Collaborative Leadership

- Stakeholder collaboration preconditions

- Rqts.-Solution/Plan baseline
- Rqts. Mgmt., Configuration Mgmt.

Disciplined change management

CMMI-MBASE Activities Performed: Customer and Product Requirements

- Elicit stakeholder needs, expectations & constraints (NE&C's)
  - OpsConcept, domain analysis, prototypes, Stakeholder win conditions
- Transform NE&C's into customer rqs. Obtain developer/acquirer agreements
  - Stakeholder win-win agreements mapped into Rqts. Description
- Develop operational concepts and scenarios
  - OpsConcept, prototypes
- Establish product rqs., architecture, interfaces
  - Architecture Description, rqs. Description guidelines
- Validate rqs., reduce cost & risk, analyze adequacy
  - Feasibility Rationale, risk management
Additional MBASE Rqts. Elements

- Separately identified Ops Concept and Prototype
  - Emphasis on relations to current (legacy) system
- Emphasis on stakeholder win-win negotiation
- Emphasis on rqts. prioritization, evolution rqts.
  - Basis of architecting for ease of change
- Emphasis on anchor point commitment milestones
  - Feasibility rationale as first-class citizen
- Emphasis on business case, stakeholder value creation
  - Relation to Benefits Realization Approach (BRA)

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DMR Benefits Realization Approach (BRA)

- Three Premises
  - Benefits do not just happen
  - Benefits rarely happen according to plan
  - Benefits realization is a continuous process

- Three Fundamentals: Shift from individual standalone IT development projects to:
  - Program management (extra - IT enablers)
  - Portfolio management (synergetic programs)
  - Full cycle governance (anticipate evolution)

- Three Necessary Conditions
  - Activist accountability
  - Relevant measurement
  - Proactive management of change

DMR/BRA Phase Gates and MBASE Anchor Points
Complementary DMR/BRA Mechanisms

- Stronger business operations modeling
  - Results chains
  - Accountability structures
- Stronger focus on programs vs projects
- Elaboration of results-chain assumptions
  - Bases of estimates
- Value management
  - Assumptions monitoring
  - Progress/risk monitoring
  - Earned value extensions
  - Change management

DMR/BRA Results Chain

Order to delivery time is an important buying criterion

ASSUMPTION

INITIATIVE

Contribution

Implement a new order entry system

Contribution

OUTCOME

Reduced order processing cycle (intermediate outcome)

OUTCOME

Increased sales

Reduce time to process order

Reduce time to deliver product

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## DMR/BRA Accountability Matrix

<table>
<thead>
<tr>
<th>Function</th>
<th>Decision Board</th>
<th>Business Sponsor</th>
<th>Program Manager</th>
<th>Project Manager</th>
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## DMR/BRA Change Management Example

- Review the estimated cost and benefits of the opportunity
- Get a clearer view of all the initiatives needed by opportunity
- Prioritize the initiatives
- Get all the stakeholders on board and get their sign-off on their initiatives
- Plan all the communications-related initiatives with the employees, including a project-related newsletter and workshop
- Assign accountabilities
- Highlight what has been achieved and not achieved, to date
- Maintain focus on realizing benefits after project is up and running
<table>
<thead>
<tr>
<th>MBASE Invariant</th>
<th>DMBRA and MBASE Strengths</th>
<th>Related MBASE Strengths</th>
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</tr>
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<tbody>
<tr>
<td>1. Stakeholder Win-Win</td>
<td>Strong, Synergy: Create a good way to identify, manage, and prioritize conditions and assumptions</td>
<td>Business value identification in conditions</td>
<td>Identification of assumptions and conditions conditions, assumptions</td>
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<td>2. Scope-controlled model integrator</td>
<td>Business-oriented model</td>
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<td>Identification of assumptions and conditions conditions, assumptions</td>
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<td>4. Anchor point (LCA, IOC)</td>
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<td>5. Stakeholder context of artifact and activity</td>
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**MBASE Process Framework**

- **Stakeholders**: Identify, prioritize, and manage stakeholders
- **Process Models**: Plan, Design, Implement, Test, Maintain
- **Project Models**: Business, Technical, Quality, Risk
- **Conceptual Models**: Architecture, Business, Data, Operations, Security
- **Product Models**: Product, Process, Technology, Environment

**LCA Lifecycle**

- **Plan**: Identify, prioritize, and manage stakeholders
- **Architecture**: Plan, Design, Implement, Test, Maintain
- **Business**: Business, Technical, Quality, Risk
- **Data**: Conceptual Models (Architecture, Business, Data, Operations, Security)
- **Technology**: Product Models (Business, Technical, Quality, Risk)
- **Environmental**: Process Models (Business, Technical, Quality, Risk)
- **Process**: Plan, Design, Implement, Test, Maintain

**Process Management**

- **Plan**: Identify, prioritize, and manage stakeholders
- **Design**: Conceptual Models (Architecture, Business, Data, Operations, Security)
- **Implement**: Product Models (Business, Technical, Quality, Risk)
- **Test**: Process Models (Business, Technical, Quality, Risk)
- **Maintain**: Process Models (Business, Technical, Quality, Risk)
Integrating DMR/BRA and MBASE

Conclusions: Transitioning to CMMI

- Need a model that is
  - Well-grounded in software experience
  - Supportive of all CMMI process areas
  - Tailorable to individual situations
  - Specific about what to do
  - Supportive of future software/system trends
    - Rapid Application Development (RAD)
    - Cost/Schedule as Independent Variable (CAIV/SAIV)
    - COTS Integration
    - Web, Internet, Agents, et al.
- Spiral Model? Almost. Needs some refinements
- MBASE? Provides key refinements
References
(MBASE material available at http://sunset.usc.edu/MBASE)


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